

In a system such as GSM, the frame structure of the TDMA transmission protocol provides a sufficient period between transmissions that a mobile station is able to retune to a different frequency to measure the field strength of the principal carrier frequency of another cell on that frequency. In other systems a mobile station may be able to communicate with more than one base station simultaneously. Each base station transmits on its principal carrier frequency at maximum power so that the mobile station is able to make a baseline comparison of the field strengths of different adjacent cells. If a base station serves more than one cell then it uses a different principal frequency for each of those cells.

This method has a number of problems. It only permits a relative measure of the field strength of an adjacent cell to be determined; the relative measure could be influenced by substantial co-channel interference on the principal carrier frequency, making the frequency unsuitable for handover. The field strength comparison only gives an indication of the strengths of the principal carrier frequencies of different cells and no information about the other carrier frequencies in those cells. It may happen that when a mobile station is handed over to an adjacent cell whose principal carrier frequency has been determined to have the strongest monitored field strength, at another carrier frequency there is so much co-channel interference that the mobile station is unable to communicate; therefore if such a handover were made the call would be dropped. Therefore, when a handover is taking place a BSC must hold available the previously allocated time slot in the cell previously serving the mobile station until the handover to the new cell is confirmed as successful. Then, if the level of interference is so high that the handover would be unsuccessful the mobile station can be handed back to the previous serving cell. This arrangement reduces network capacity because it requires two slots to be held open during a hand over.

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WO 97/15169 describes an arrangement where signal strength measurements are made by the mobile station, the signal strength measurements are delayed

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when the mobile is transmitting and receiving on a channel and then more frequent signal strength measurements are made when there is no communication. An alternative arrangement described in this document describes the mobile station "stealing" one or more time slots to perform the signal strength measurements by ignoring its task of receiving and/or transmitting information.

There is therefore a need for a way to determine more accurately the quality of service that can be expected on a new carrier frequency to which a mobile station

AMENDED SHEET

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